ICSU World Data System

Trusted Data Services for Global Science

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International Council for Science

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'ICSU's long-term vision is of a world where excellence in science is effectively translated into policy making and socio-economic development. In such a world, **universal and equitable access to scientific data and information** is a reality …'

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Foundation

ICSU's 29th General Assembly in Maputo decided:

- To confirm that ICSU will continue to assert a strategic leadership role in relation to scientific data and information
- To establish a new ICSU-World Data System as an Interdisciplinary Body to replace the World Data Centres (WDCs) and Federation of Astronomical and Geophysical Data Analysis Services (FAGS)

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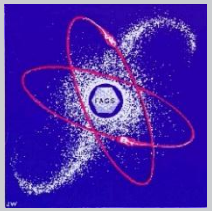
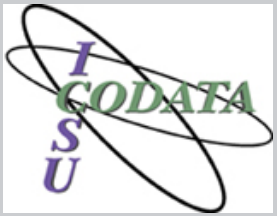
ICSU's Data and Information

Facilitating the scientific research endeavours by coordinating trusted scientific data services for the provision, use, and preservation of relevant datasets.
www.icsu-wds.org

works to improve the quality, reliability, management and accessibility of data of importance to all fields of science and technology.
www.codata.org

Improve access, production and use of research information and knowledge, so that countries are equipped to solve their development challenges
www.inasp.info

ICSU Data Bodies

PAST	  
PRESENT	 

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WDS Scientific Committee 2012–2015

WDS-SC Members and WDS-IPO Staff

- **Bernard Minster** (*Chair, USA*)
- **Michael Diepenbroek** (*Germany*)
- **Françoise Genova** (*France*)
- **Claudia Emerson** (*Canada*)
- **Sandra Harrison** (*UK*)
- **Wim Hugo** (*South Africa*)
- **Jane Hunter** (*Australia*)
- **Vasily Kopylov** (*Russian Fed.*)
- **Guoqing Li** (*China*)
- **Ruth Neilan** (*USA*)
- **Lesley Rickards** (*UK*)
- **Ryosuke Shibasaki** (*Japan*)
- **Ariel Troisi** (*Argentina*)
- **Orhan Altan** (Ex officio, *ICSU*)
- **Yasuhiro Murayama** *(Ex officio, NICT)*

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WDS Implementation

1. Constitution
2. Data policy
3. Certification criteria
   and Membership Applications
4. International Programme Office
5. Working Groups
6. Strategic Plan

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ICSU-WDS

- ✓ Full and open access data policy
- ✓ Broad disciplinary and geographic coverage
- ✓ Trusted Scientific Data Repositories and Services

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WDS Members

Scientific Data Services: Assist organizations in the **capture**, **storage**, **curation**, **long-term preservation**, **discovery**, **access**, **retrieval**, **aggregation**, **analysis**, and/or **visualization** of scientific data, as well as in the associated **legal frameworks**, to **support disciplinary and multidisciplinary scientific research**.

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WDS Membership

57 Regular	Organizations that are data stewards and/or data analysis services
10 Networks	umbrella bodies representing groups of data stewardship organizations and/or data analysis services (EOSDIS, IODE, IVOA...)
3 Partners	Contribute support to WDS Membership **(DataCite)**
17 Associates	Interested in the WDS endeavour

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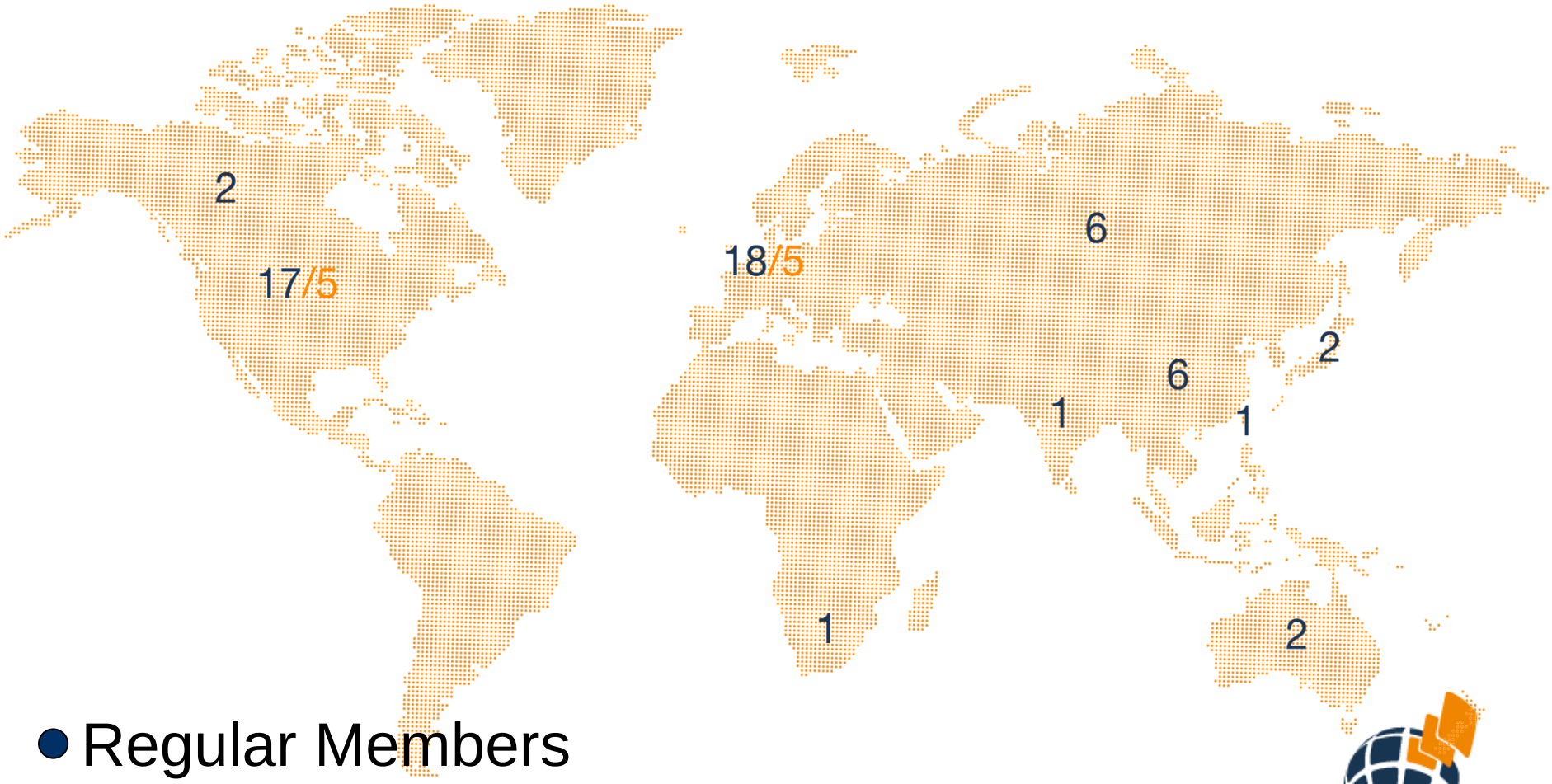
WDS Membership



- Regular Members
- Network Members

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WDS Implementation

WDS International Programme Office

WDS-IPO Inauguration, May 2012

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International Programme Office

Hosted and supported by the Japanese National Institute for Information and Communication Technologies (NICT)

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Strategic Targets

1) Make trusted data services an integral part of international collaborative scientific research
2) Nurture active disciplinary and multidisciplinary scientific data services communities
3) Improve the funding environment
4) Improve the trust in and quality of open Scientific Data Services
5) Position WDS as the premium global multidisciplinary network for quality-assessed scientific research data

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WDS Implementation

Strategic Targets

1. **Make trusted data services an integral part of international collaborative scientific research**
   - Involve WDS Members more closely into international collaborative scientific research.
   - Promote the use of best practices in international collaborative research programmes.
2. **Nurture active disciplinary and multidisciplinary scientific data services communities**
   - Support existing communities whose practices serve their members well.
   - Support emerging communities by helping them to identify their needs and to organize their activities.
   - Provide mechanisms that facilitate cross-disciplinary interactions and activities.
   - Contribute towards scientific development by improving the analytical environment.

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WDS Implementation

Strategic Targets (Ctd.)

3. **Improve the funding environment**
   - Promote international, national, and disciplinary policies that lead to sustainable long-term funding.
   - Engage and work with research funders to increase resources for data services, including as part of research funding.
4. **Improve the trust in and quality of open scientific data services**
   - Provide a certification framework for WDS Regular and Network Members.
   - Actively promote policies of full and open access to data at national and international fora.
   - Foster interoperable practices to facilitate data sharing.
   - Facilitate access to, and use or reuse of datasets—including through publication— in particular for multidisciplinary research.
5. **Position ICSU-WDS as the premium global multidisciplinary network for quality-assessed scientific research data**

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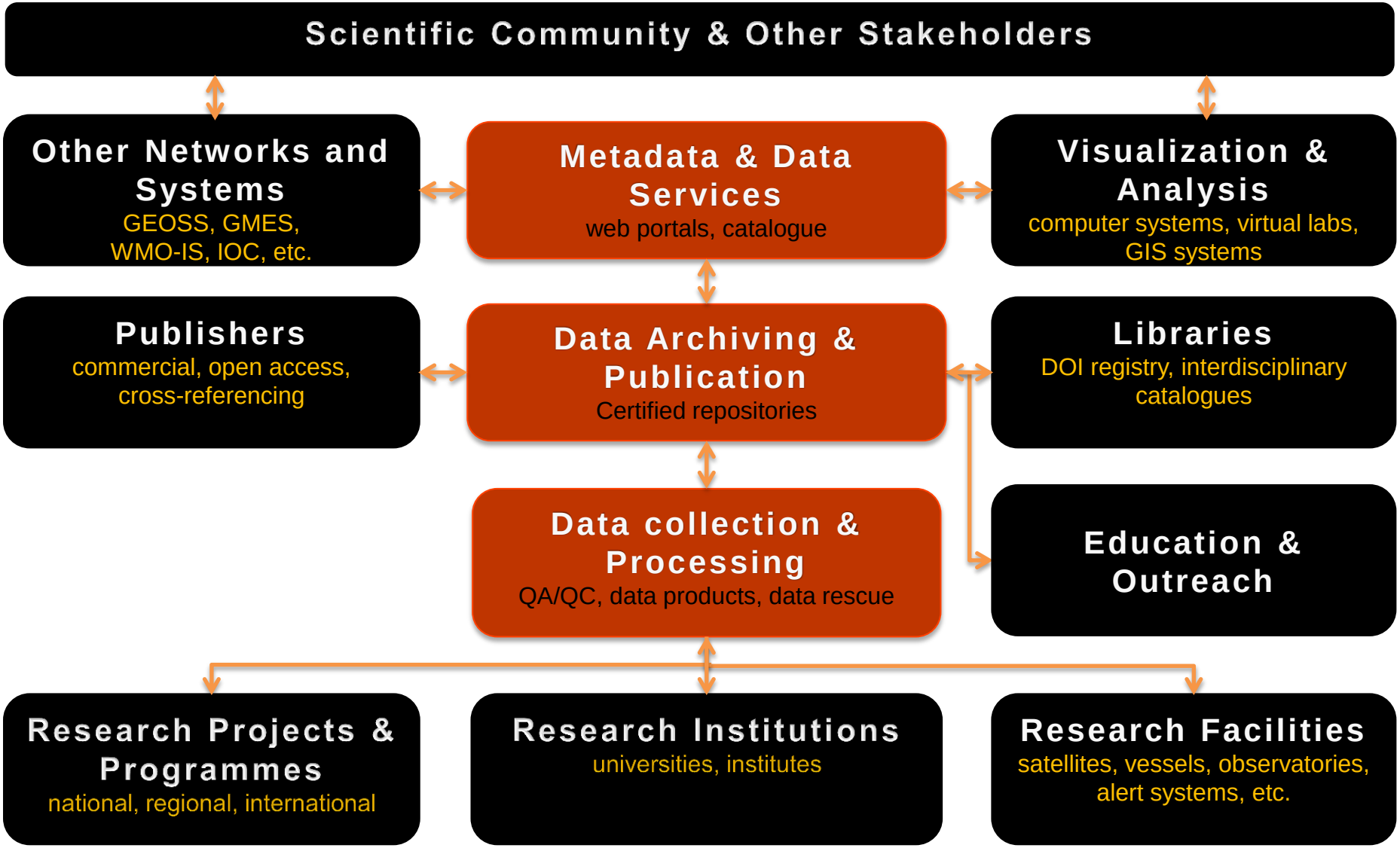
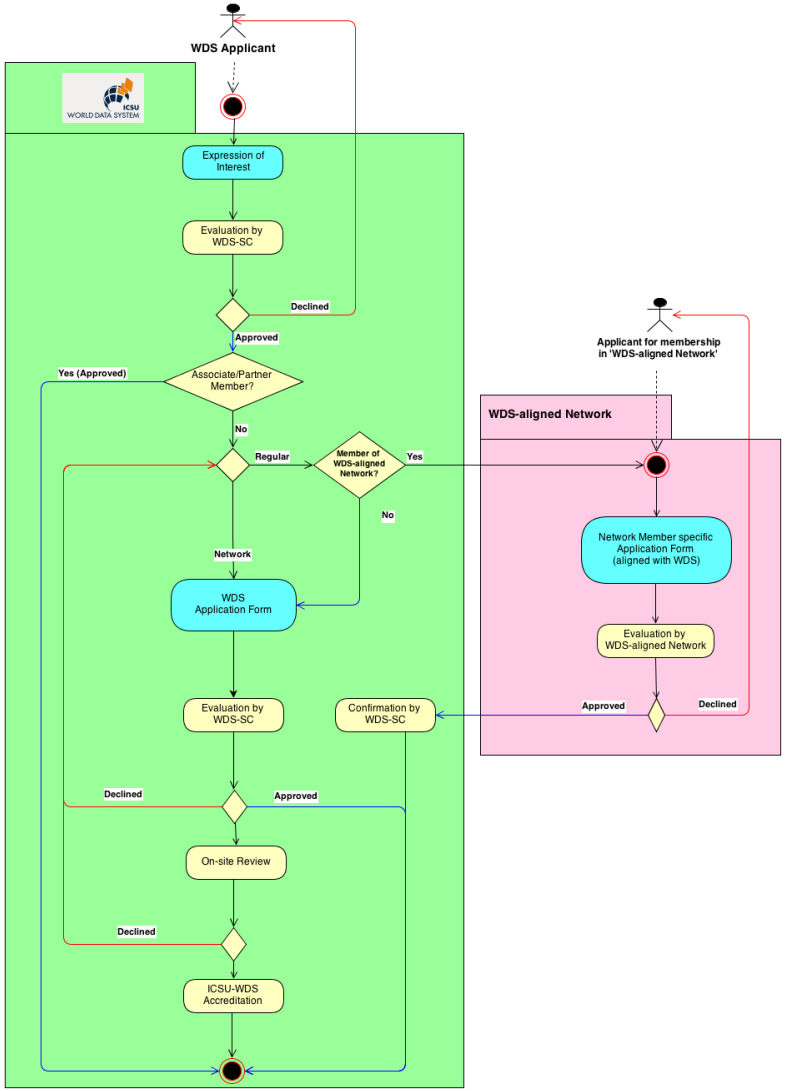
Structure and Architecture



Text

WDS Certification



- Organizational framework
- Management of data, products and services
- Technical infrastructure

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Working Groups

- Publishing Data (WDS-RDA):
    - Workflows
    - Bibliometrics
    - Cost Recovery
    - Publishing Services
- Knowledge Network
- Certification (WDS-DSA)
- Global registry of trusted data services

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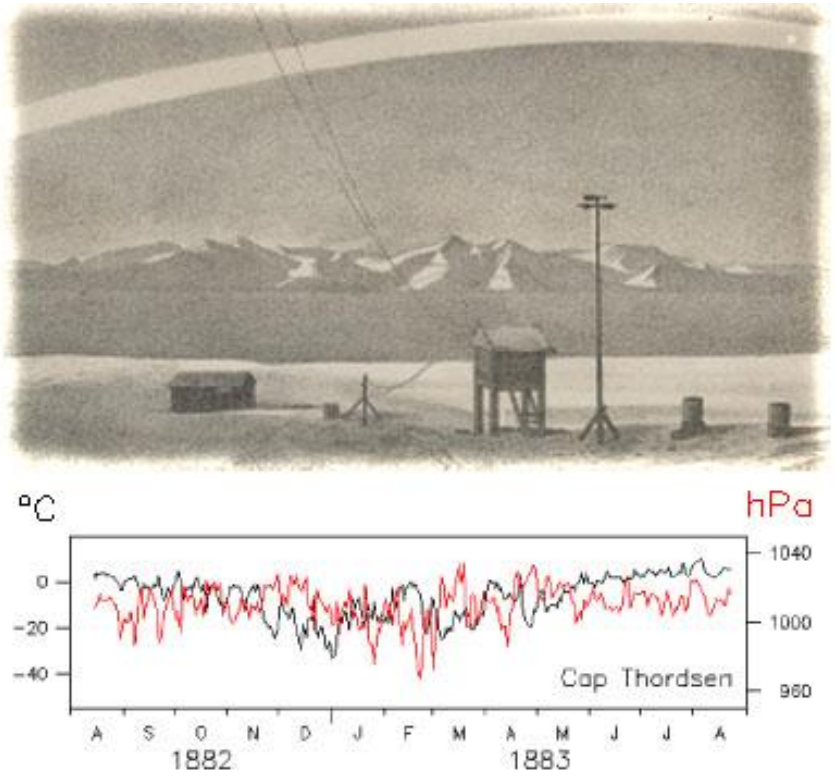
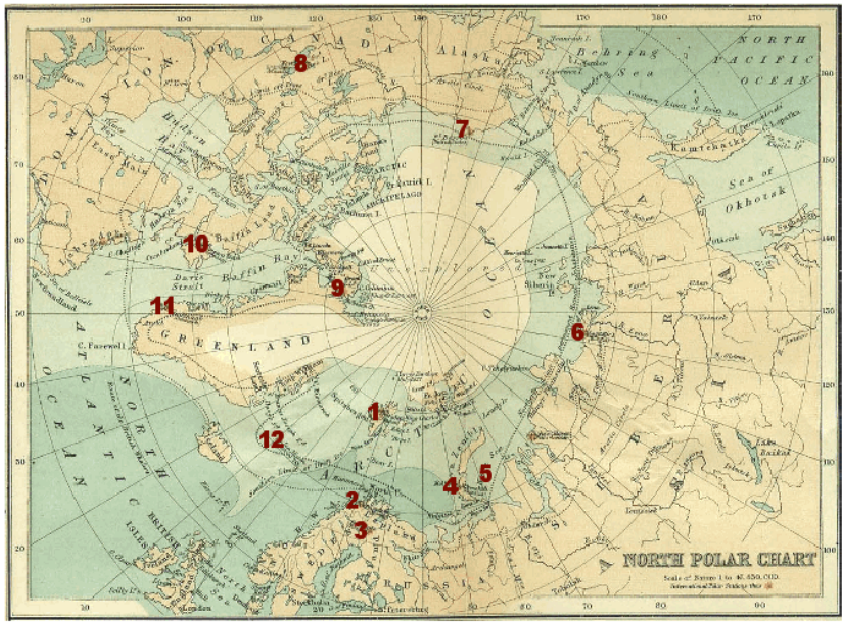
Global Research Data Infrastructure

International Polar Years 1881–1882 and 1932–1933



Weather station and meteorological data recorded at Cap Thordsen, Spitzbergen, during the first IPY.

Primary IPY Stations in the Arctic 1881-1884



So extensive and dangerous a work

Eleven nations established 14 principal research stations spread across the Polar Regions; 12 were located in the Arctic, along with at least 13 auxiliary stations. Some 700 men incurred the dangers of Arctic service to establish and relieve these stations between 1881 and 1884.

Global Research Data Infrastructure

International Geophysical Year 1958–59

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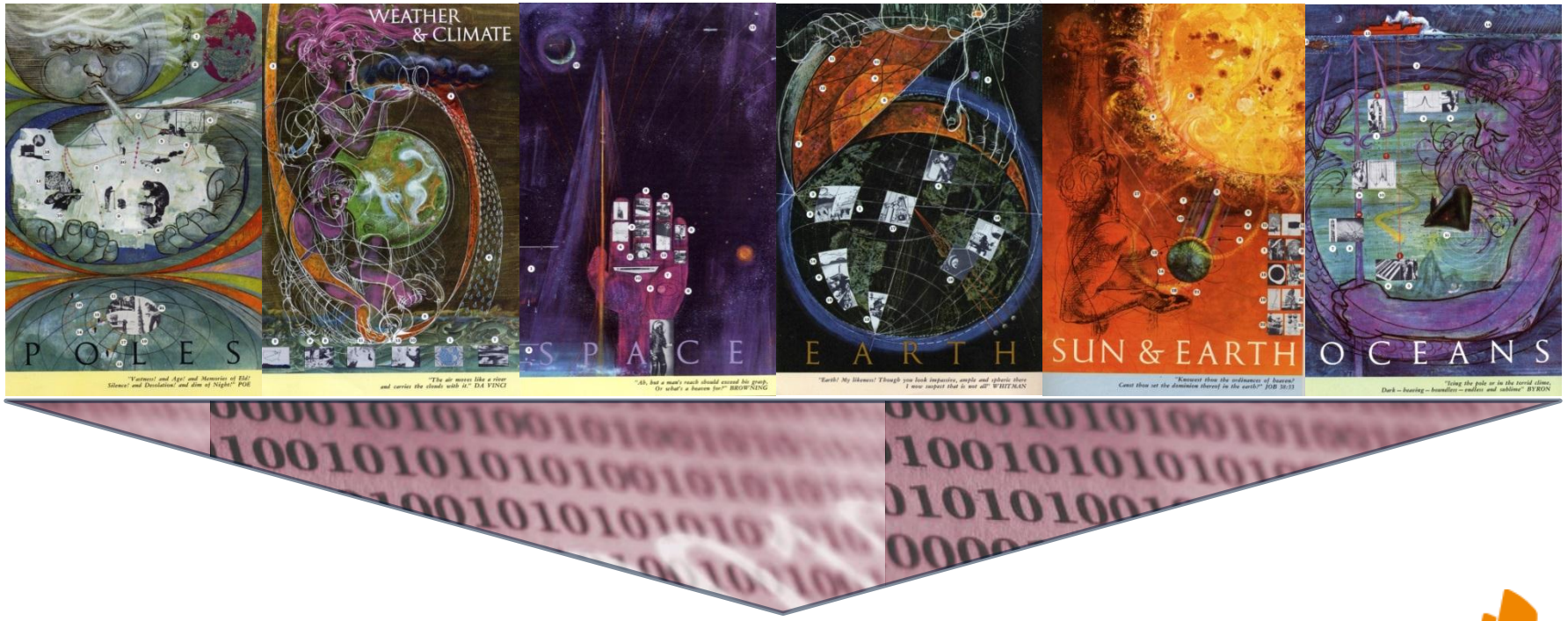
International Geophysical Year 1958–59



ICSU WDCs

FAGS

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Global Research Data Infrastructure

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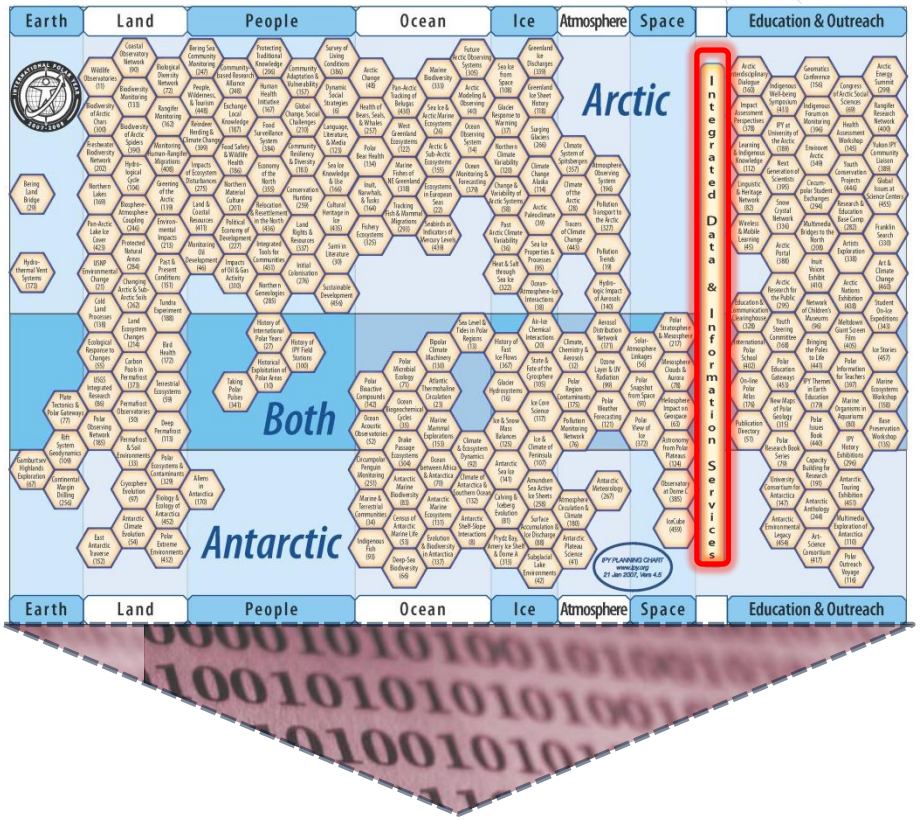
Global Research Data Infrastructure

International Polar Year (2007–2008)

Global Research Data Infrastructure

International Polar Year (2007–2008)



Integrated Data and Information System:
IPY-DIS ≠ WDCs + FAGS

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Global Research Data Infrastructure

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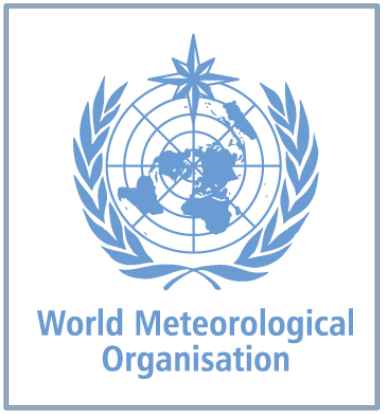
Global Research Data Infrastructure



International coordination to deliver research data infrastructure

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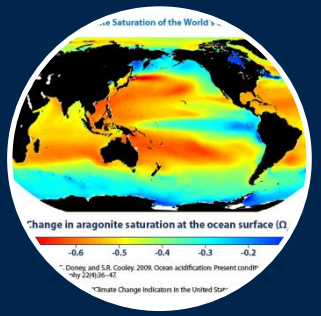
International Coordination

International Coordination

Existing Data

Existing Knowledge

New Observations

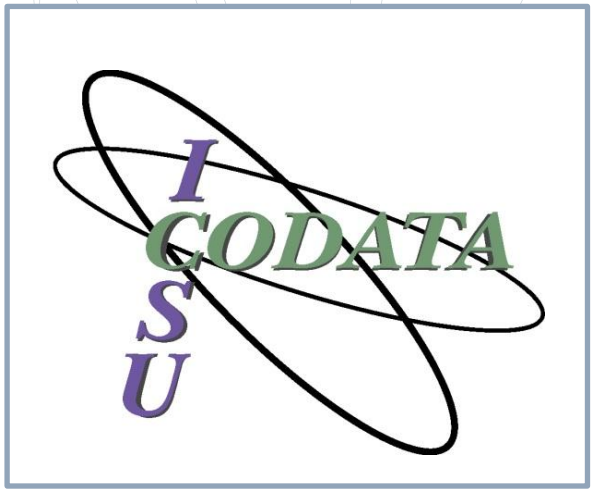


Models

Integrated and interdisciplinary datasets, indicators, visualizations, scenarios, information…

Social, economics, ecosystems, geophysics

International Coordination



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Building Trust

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Building Trust

NEWS FEATURE

AN EROSION OF TRUST?

Many climate researchers worry that scepticism about global warming is on the rise. **Jeff Tollefson** investigates the basis for that concern and what scientists are doing about it.

Last November, a catchy music video popped up on YouTube and attracted thousands of fans. Called 'Hide the Decline', the video featured a caricature of climate researcher Michael Mann admitting that he had committed fraud while creating his famous 'hockey-stick' graph of temperatures over the past millennium. Accompanied by a kitten playing the guitar, the cartoon image of Mann joyfully sings, "Making up data the old hard way, fudging the numbers day by day."

The video wasn't funny to the real Mann, director of the Earth System Science Center at Pennsylvania State University in University Park. A lawyer wrote to the group responsible for it, threatening to sue them for defamation and for using a copyrighted image. The video was promptly taken down and a new version — without the copyrighted photo — appeared on YouTube.

Mann has grown weary of dealing with the various groups that are criticizing him. "In reality, these groups are guilty over and over again of defamation, slander and libel, but that is far more difficult to fight legally," Mann says. "Even if you were to prevail, you would have invested potentially several years of your career, and frankly those of us who love doing science are not willing to do that."

Mann isn't alone in wondering how to respond to the wave of attacks that followed November's leak of e-mails from climate researchers at the University of East Anglia in Norwich, UK. Beyond the satire and vitriol appearing on blogs, researchers have endured threatening phone messages and other forms of harassment. And they're frustrated that governments have yet to mobilize in the face of solid evidence for global warming. All of this has spread fear among climate scientists that they are losing the war over public opinion, just a few years after a swell of support followed the most recent report from the Intergovernmental Panel on Climate Change (IPCC) in Geneva, Switzerland, which garnered a Nobel Peace Prize in 2007.

However, polling data suggest that the situation is not as dire as many researchers suspect. Studies in the United States and the United Kingdom show that belief in global warming has dropped in recent years, but a majority of people still trust climate scientists. There are also signs that public support for actions on global warming have grown in recent months.

Still, scientists and scientific societies have decided that they need to fight back against the proliferating misinformation. They are using novel approaches to get their message across, such as trying to humanize climate scientists. "We're trying to see if we can inoculate against

M. MATHEWELLI

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Building Trust

Building Trust

RDA/WDS: Publishing Data Interest Group

Co-chairs: Michael Diepenbroek[1], Eefke Smit[2], Jonathan Tedds[3]

[1]PANGAEA, University of Bremen, Germany [2]STM Publishers, The Netherlands [3]D2K Group, University of Leicester, UK

Emails: mdiepenbroek@pangaea.de, smit@stm-assoc.org, jat26@le.ac.uk.

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RDA RESEARCH DATA ALLIANCE

Introduction

In the empirical sciences, data has traditionally been an integral part of scholarly publishing. In recent decades rapid technical developments, such as digital data and high-throughput techniques, have dramatically altered the scholarly publishing paradigm. This requires new approaches in order to ensure the availability and usability of research data.

Various technical solutions in use or proposed to date offer promise but do not yet provide sufficient benefit and incentives for the data producers themselves and so take up among researchers is still relatively low. The concept of Publishing Data is undergoing a renaissance as part of scholarly communication and on the base of new and proven technologies such as establishing persistent identifiers for datasets. Publishing data offers a strong incentive for researchers to share their data and benefits the wider community through a focus on data quality.

The impact on citation rates is beginning to be demonstrated through bibliometric studies of research articles that include underlying data or are based on secondary reuse of existing datasets such as in astronomy.

The Publishing Data Interest Group brings together all stakeholders involved in publishing research data including researchers, discipline specific and institutional data repositories, academic publishers, funders and service providers. The following 4 initial Working Groups are being developed through the RDA in patnership with the ICSU-WDS and are currently developing Case Statements under the umbrella of the Publishing Data Interest Group. New Working Groups can be formed or join the Interest group as it develops.

Workflows for Archiving and Publishing Data

Jonathan Tedds, Kim Finney, John Helly, Hylke Koers, Fiona Murphy, Amy Nurnberger, Lisa Raymond, Mary Vardigan, Eva Zanzerkia

- Investigate current workflows for archiving and publishing data
- The role of QA/QC and peer-review in the publication process
- The role of science publishers/journals in the data publication process
- Barriers to implementation

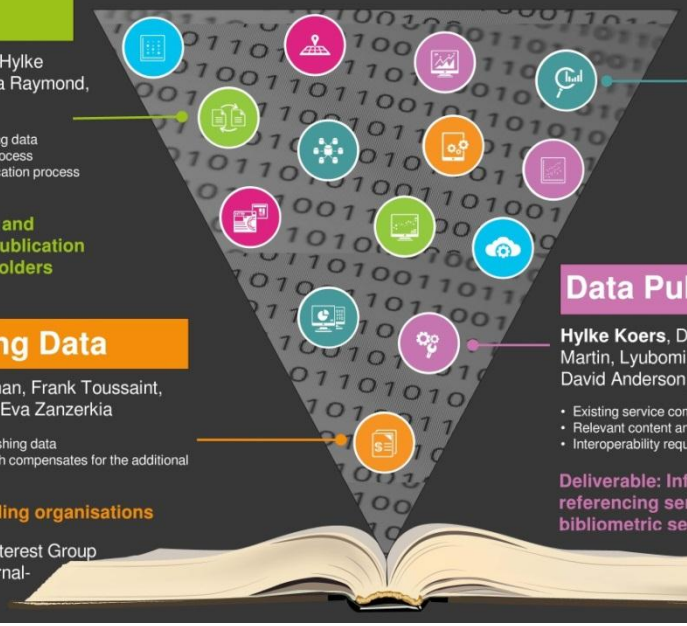
Deliverable: Provide a range of generic and discipline specific workflows for data publication identifying roles, resources and stakeholders

The Costs of Publishing Data

Ingrid Dillo, Simon Hodson, Barbara Sierman, Frank Toussaint, Mark Thorley, Kim Finney, Anita de Waard, Eva Zanzerkia

- Investigate current cost strutures for archiving and publishing data
- Elaborate a business model based on open access which compensates for the additional costs due to data publication

Deliverable: Recommendations for funding organisations



Bibliometrics Including Published Data

Kerstin Lehnert, Euan Adie, Jan Brase, Ross Cameron, Cyndy Chandler, Ingeborg Meijer, Fiona Murphy, Lyubomir Penev, Fiona Nielsen, Nigel Robinson, Mary Vardigan

- General requirements for citability of scientific data (granularity, citation information and persistent identifiction)
- Current citation practice in data centres and literature

Deliverable: Recomendations for data publishers and academic publishers

Data Publication Services

Hylke Koers, David Carlson, John Helly, Francisco Hernandez, Caroline Martin, Lyubomir Penev, Nigel Robinson, Johanna Schwarz, Eva Zanzerkia David Anderson, Juanle Wang

- Existing service components to be used as building blocks
- Relevant content and interoprability standards
- Interoperability requirements for data centres (registration, metadata and data services)

Deliverable: Infrastructure and organisation for a one-for-all cross referencing service for academic publishers and providers of bibliometric services

Scan to visit the Publishing Data Interest Group website: https://rd-alliance.org/internal-groups/publishing-data-ig.html

Scan to join the DATA-PUBLICATION mailing list:http://jiscmail.ac.uk/DATA-PUBLICATION

Trusted Digital Repositories/Services

- WDS & DSA: lightweight certification framework
- NESTOR seal
- DIN standard 31644, TRAC criteria
- ISO standard 16363

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Thank you for your attention!

www.ICSU-WDS.org

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